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EXAMINER

DEAN, RAYMOND S

ART UNIT	PAPER NUMBER
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2684

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/905,774

Applicant(s)

SPRATT, MICHAEL P.

Examiner

Raymond S Dean

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 61 and 72 - 93 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 61 and 72 - 93 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see amendment filed January 6, 2005 with respect to the rejection(s) of claim(s) 1, 48, 72 – 75, and 83 – 84 under 35 U.S.C. 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art Kingdon et al. (6,078,818). Examiner agrees with applicant's assertion that Honda does not teach a distance quantity. Honda, however, does teach position information (See Column 2 lines 62 – 67). The typical position information will comprise information such as location of the information source and distance related quantities, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated. Examiner also agrees with applicant's assertion that Honda does not teach passing or diffusing said distance quantity between entities. Honda however does teach passing or diffusing position information, which comprises distance related quantities (See Column 2 lines 36 – 42, lines 62 – 67). Examiner agrees with applicant's assertion that Honda does not teach updating distances indicative of an upper bound value for the distance traveled. Honda, however, does teach updating distance related quantities indicative of the maximum distance traveled (See Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in

distance the distance from the information source to said mobile station along with the corresponding distance related value will be corrected by said finite increment).

Examiner respectfully disagrees with applicant's assertion that Honda does not take account of perceived travel. The distance between the two positions is an average distance, which is an estimation, thus the distance and travel will not be exact. Honda also teaches measuring or estimating the distance traveled by the mobile entity with a distance sub-system (See Figure 5, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the information from the position detector is used in determining the average distance, which is an estimation, traveled by the mobile station). Honda further teaches increasing distance related quantities by an amount related to the transmission range of the transmitting entity (See Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission distance). Honda further teaches increasing distance related quantities to take account of movement of the mobile entity (See Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station along with the distance related values will be corrected by said finite increment). Honda further teaches increasing maximum distances associated with each data item (See Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1

– 3, the distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station along with the distance related values will be corrected by said finite increment).

Kingdon teaches an actual distance quantity (See Column 4 lines 17 – 31, the latitude is a distance quantity). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the distance quantity taught by Kingdon in the position information of Honda as an alternative means for determining the distance from the information source.

2. Applicant's arguments, see amendment filed January 6, 2005 with respect to the rejection(s) of claim(s) 19, 31, and 43 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art Kingdon et al. (6,078,818). Examiner agrees with applicant's assertion that Chou does not teach a distance quantity indicative of an upper bound value for the distance traveled by the location data item. Honda in view of Kingdon, as set forth above, teaches a distance quantity indicative of an upper bound value for the distance traveled by the location data item. Chou, however, teaches an entity initially indicating multiple location zones where the entity could be located (Column 3 lines 23 – 25, Column 4 lines 23 – 26, Column 6 lines 52 - 58, the smart mobile unit (SMU) can indicate multiple areas that the object can be based on the locations of said object in the past) the entity

seeks to determine which location zone is the most probable on the basis of one or more of the following probability indicators: the size of the location zones as compared with an expected degree of location uncertainty; the natures of the routes followed in order to arrive at the location zones from the known locations involved; a previous history of locations visited or passed through by the entity; the correspondence of sensed travel events, such as turning, with opportunities for such events along routes to the location zones (Column 6 lines 52 – 58, the history of the locations of the object are used to determine the most probable location when GPS data is lost).

Honda in view of Kingdon and Chou teach a mobile station that determines the position of an object via a GPS system thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the location history method taught above by Chou in the mobile station of Honda in view of Kingdon for the purpose of maintaining an autonomous object position update when GPS data is lost as taught by Chou.

3. Applicant's arguments, see amendment filed January 6, 2005 with respect to the rejection(s) of claim(s) 21 – 23, 33 – 35, 45 – 47, and 61 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art Kingdon et al. (6,078,818). Examiner agrees with applicant's assertion that Pite does not teach a data item including a distance quantity indicative of an upper bound value for the distance traveled by the location data item. Honda in view

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of Kingdon, as set forth above, teaches a data item including a distance quantity indicative of an upper bound value for the distance traveled by the location data item. Pite, however, teaches wherein a best estimate of location is derived within an area of possible locations based on an averaging relative to vertices of that area (Figure 1, Column 4 lines 41 – 44, Column 8 lines 30 – 40). Pite further teaches wherein the estimate is carried out by averaging of coordinate values of said vertices (Column 8 lines 30 – 40, the triangle is created from the vertices, which are averaged points of said triangle) and wherein said estimate is carried out by finding the center of gravity of a polygon delimited by said vertices (Column 8 lines 30 – 40, the polygon is the triangle).

Honda in view of Kingdon and Pite teach a wireless system in which location of the mobile station is determined thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the averaging relative to vertices method taught by Pite in the wireless system of Honda for the purpose of providing an alternative means of locating a mobile station as taught by Pite.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 84 and 93 is rejected under 35 U.S.C. 102(e) as being anticipated by Honda et al. (US 6,477,353).

Regarding Claim 84, Honda teaches a method of disseminating location information, wherein location data, including a first component specifying a location and a second component indicative of the distance from the location specified by the first component, is passed between devices by short-range transceiver (Column 2 lines 36 – 42, Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 6 lines 13 – 16, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated), said second component of the location data being increased, for each transmission hop between two devices, by an amount related to the transmission range of the transmitting device (Column 5 lines 14 – 18, Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission distance).

Regarding Claim 93, Honda teaches all of the claimed limitations recited in Claim 84. Honda further teaches wherein the second component is indicative of the distance from the location specified by the first component, independently from the first component (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 6 lines 13 – 16,

Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated, the typical position information comprises fields that contain said information, said fields enable the independence of said information).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 – 18, 20, 24 – 30, 32, 36 – 42, 44, 48 – 60, 72 – 83, and 85 – 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al. (US 6,477,353) in view of Kingdon et al. (6,078,818).

Regarding Claim 1, Honda teaches a method of disseminating location information wherein location data items originating at known locations are passed to, and diffused between, entities by short-range communication (Column 2 lines 36 – 42, Column 6 lines 13 – 16), each location data item specifying the said known location at which it is originated and including a distance-related quantity indicative of an upper bound value for the distance traveled by the location data item from the specified known

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location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated), said entities updating the distance-related quantities of location data items they handle to take account of perceived travel of these location data items (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station along with the corresponding distance related values will be corrected by said finite increment).

Honda does not teach a distance quantity.

Kingdon teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the distance quantity taught by Kingdon in the position information of Honda as an alternative means for determining the distance from the information source.

Regarding Claim 2, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 1. Honda further teaches a mobile entity that increases the distance-related quantity of the or each location data item it handles by an amount

corresponding to the distance moved by the entity whilst holding the location data item (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station along with the corresponding distance related values will be corrected by said finite increment). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 3, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 2. Honda further teaches wherein the mobile entity is a vehicle equipped with a short – range transceiver (Column 6 lines 13 – 16, Column 6 lines 20 – 21) and an odometer (Column 6 lines 20 – 21, the mobile station can be in a car, which has an odometer), the vehicle increasing the distance-related quantity of its location data items by the distance traveled by the vehicle as indicated by said odometer (Column 7 lines 56 – 67, Column 8 lines 1 – 3, distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance, which can be measured by the odometer in the car, the distance from the information source to said mobile station along with the corresponding distance related values will be corrected by said finite increment). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 4, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 2. Honda further teaches wherein the mobile entity is a pedestrian carrying a mobile device with a short-range transceiver (Column 6 lines 13 –

16, Column 9 lines 49 – 52), the device effecting an estimate of the maximum distance likely to have been traveled by the pedestrian based on a speed value and elapsed time (Figure 5, Column 6 lines 29 – 32), and the device increasing the distance-related quantity of its location data items by said estimate of the maximum distance likely to have been traveled by the pedestrian (Column 7 lines 63 – 67, Column 8 lines 1 – 3). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 5, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 4. Honda further teaches wherein said speed is the maximum speed of the pedestrian as judged over time by the device based on the time taken for the pedestrian to move between locations as determined by the location determination operation (Column 6 lines 29 – 32).

Regarding Claim 6, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 4. Honda further teaches the device: monitoring the current speed of the pedestrian based on the time taken for the pedestrian to move between locations of known position (Column 6 lines 29 – 32), and in the event of the current speed of the pedestrian exceeding said standard maximum speed, preventing the passing on of location data items from the mobile entity to other said entities (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 8 lines 47 – 57, the mobile station can travel at a speed that would position said mobile station at a distance that prevents said mobile station from transferring information received from the information source).

Regarding Claim 7, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 1. Honda further teaches wherein the distance-related quantity of a said location data item is increased, for each transmission hop between two entities by an amount related to the transmission range of the transmitting entity (Column 5 lines 14 – 18, Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission distance). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 8, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 7. Honda further teaches a fixed range value for the transmitting entity, this range value being added by the transmitting entity to said distance-related quantity (Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission distance, said correction will be obtained by adding a fixed value if the mobile station does not move). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 9, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 7. Honda further teaches incorporating a hop count for

providing a measure of the distance traveled by the location data item concerned as a result of transmission hops (Column 5 lines 14 – 18, the information can hop among mobile stations thus there will be a hop count).

Regarding Claim 10, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 7. Honda further teaches wherein the increase of said distance-related quantity is a fraction of a range value for the transmitting entity (Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission distance, said transmission distance can be a fraction of a value), this fraction being determined by the receiving entity in dependence on the received signal strength, the receiving entity adjusting said distance-related quantity accordingly (Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission distance, said transmission distance can be a fraction of a value). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 11, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 1. Honda further teaches wherein a mobile entity increases the distance-related quantity of the or each location data item it handles both by an

amount corresponding to the distance moved by the entity whilst holding the location data item (Column 7 lines 63 – 67, Column 8 lines 1 – 3, the distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station will be corrected by said finite increment) and by an amount related to the transmission range of the transmitting entity in respect of one of receipt and transmission of the location data item by mobile entity (Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission distance). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claims 12, 24, 36, Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 1, 2, 7 respectively. Honda further teaches wherein a said entity determines its location by determining a location simultaneously consistent, or most nearly consistent, with the upper bound values it knows of as a result of location data items it has received (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, if the mobile station does not move the distance calculated from the position information will not be corrected and thus will be consistent with the distance related values that can comprise said position information).

Regarding Claim 13, 25, 37, Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 12, 24, 36 respectively. Honda further teaches wherein

said entity applies one or more route constraints for how the location data items passed to the mobile entity (Column 7 lines 9 – 17, the information must be transferred from other mobile stations instead of A and B thus the route of transfer is restricted to said other mobile stations).

Regarding Claims 14, 26, 38 Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 13, 25, 37 respectively. Honda further teaches applying a constraint that the said upper bound values are distances along predetermined routes from the known locations concerned (Column 2 lines 62 – 67, Column 3 lines 1 – 7, the propagation of information is limited to a specific area thus there will be specific routes for said area).

Regarding Claims 15, 27, 39 Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 14, 26, 38 respectively. Honda further teaches routes on a map represented by map data known to the entity (Column 6 lines 20 – 25, map data comprises latitude and longitude).

Regarding Claims 16, 28, 40, Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 13, 25, 37 respectively. Honda further teaches applying a constraint that the said upper bound values are distances along indeterminate routes that avoid particular zones (Column 7 lines 1 – 17, the particular zones are the high density areas, the information must be transferred from other mobile stations instead of A and B thus the route of transfer is restricted to said other mobile stations).

Regarding Claims 17, 29, 41 Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 13, 25, 37 respectively. Honda further teaches wherein a received location data item includes an indication of a constraint type to be applied over at least a certain length of the associated upper bound distance value (Column 2 lines 62 – 67, Column 3 lines 1 – 7, if the distance value is restricted to a threshold value in order for the information to be transferred).

Regarding Claims 18, 30, 42 Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 12, 24, 36 respectively. Honda further teaches wherein upon said entity receiving a location data item indicating an upper bound distance value to a known location for which a location data item has been previously received, one of the location data items is discarded (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 8 lines 47 – 57, the information that is discarded can comprise distance information that has already been received a previous time if the mobile station has not moved) the discarded item being the one indicating the larger upper bound distance value to the known location taking account of any increases due to movement of the entity after item receipt (Column 7 lines 63 – 67, Column 8 lines 1 – 3, the information that is discarded can comprise distance information that has already been received a previous time if the mobile station has not moved again).

Regarding Claims 20, 32, 44 Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 12, 24, 36 respectively. Honda further teaches wherein the location of said entity is determined on two separate occasions with the later determination using location data received after the first determination whereby to

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enable an indication of the average direction of travel to be derived (Figure 5, Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 6 lines 18 – 19, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position detector in conjunction with the GPS system can determine the direction of travel of the mobile station, said mobile station can calculate the distance traveled by using the position information transmitted from the information source, said position information can comprise a distance value, said distance value will be corrected by the increment of said distance traveled).

Regarding Claim 48, Honda teaches an entity comprising: a short-range transceiver for exchanging with currently nearby entities location data items (Column 2 lines 36 – 42, Column 6 lines 13 – 16), that each specifies the originating location and includes a distance-related quantity indicative of an upper bound distance to that location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated); a memory for storing the received data items (Column 6 lines 33 – 37); an update arrangement for maintaining the received location data items by updating the distance-related quantity of each location data item to take account of perceived travel of the location data items (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in

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distance the distance from the information source to said mobile station along with the distance related values will be corrected by said finite increment); and a control arrangement for causing the short-range transceiver to pass on to a newly encountered entity, previously-received location data items the distance-related quantities of which have been updated by the update arrangement (Column 2 lines 36 – 42, Column 2 lines 62 – 67, Column 3 lines 1 – 7, a finite amount of time will expire between the point at which the mobile station receives the position information and the point at which said position information is transferred to a newly encountered mobile station due to the determination of whether or not the received position information is to be transferred, if it is determined that the position information is to be transferred said position information will be the position information previously received by the mobile station from which said position information is transferred).

Honda does not teach a distance quantity.

Kingdon teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the distance quantity taught by Kingdon in the position information of Honda as an alternative means for determining the distance from the information source.

Regarding Claim 49, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 48. Honda further teaches a mobile entity and update arrangement that is arranged to maintains the received location data items by

increasing the distance-related quantity of the or each location data item it handles by an amount corresponding to the distance moved by the entity whilst holding the location data item (Figure 5, Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station along with the distance related values will be corrected by said finite increment). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 50, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 49. Honda further teaches wherein the mobile entity is a vehicle equipped with a short – range transceiver (Column 6 lines 13 – 16, Column 6 lines 20 – 21) and an odometer (Column 6 lines 20 – 21, the mobile station can be in a car, which has an odometer), the update arrangement being arranged to increase the distance-related quantity of the received location data items by the distance traveled by the vehicle as indicated by said odometer (Column 7 lines 56 – 67, Column 8 lines 1 – 3, distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance, which can be measured by the odometer in the car, the distance from the information source to said mobile station along with the distance related values will be corrected by said finite increment). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 51, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 49. Honda further teaches wherein the mobile entity is a mobile device intended be carried by a pedestrian (Column 9 lines 49 – 52), the update arrangement being arranged to effect an estimate of the maximum distance likely to have been traveled by the pedestrian based on a speed value and elapsed time (Figure 5, Column 6 lines 29 – 32), and to increase the distance-related quantity of the received location data items by said estimate of the maximum distance likely to have been traveled by the pedestrian (Column 7 lines 63 – 67, Column 8 lines 1 – 3). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 52, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 51. Honda further teaches a location determining arrangement for effecting location determination by determining what locations are simultaneously consistent, or most nearly consistent, with the said upper bound distances known to the entity (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, if the mobile station does not move the distance calculated from the position information will not be corrected and thus will be consistent with the distance related values that can comprise said position information thus said mobile station can determine what locations are consistent with said distant related values, thus said mobile station will comprise a location determination arrangement that conducts said determination); the location determining arrangement being arranged to determine maximum speed of the pedestrian based on the time taken for the pedestrian

to move between locations as determined by the location determination arrangement (Column 6 lines 29 – 32); the update arrangement being arranged to use this maximum speed as said speed value for estimating the maximum distance likely to have been traveled by the pedestrian (Column 6 lines 29 – 32, the maximum distance determined by the position detector corresponds to the maximum speed).

Regarding Claim 53, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 51. Honda further teaches a location determining arrangement for effecting location determination by determining what locations are simultaneously consistent, or most nearly consistent, with the said upper bound distances known to the entity (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, if the mobile station does not move the distance calculated from the position information will not be corrected and thus will be consistent with the distance related values that can comprise said position information thus said mobile station can determine what locations are consistent with said distant related values, thus said mobile station will comprise a location determination arrangement that conducts said determination); the update arrangement being arranged to use as said speed value a standard maximum speed for walking pedestrians (Column 6 lines 29 – 32) and the control arrangement being arranged to monitor the current speed of the pedestrian based on the time taken for the pedestrian to move between locations of known position as determined by the location determining arrangement (Column 6 lines 29 – 32), and in the event of the current speed of the pedestrian exceeds said standard maximum speed, prevent the passing on of location data items from the mobile entity to

other said entities by the short-range transceiver (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 8 lines 47 – 57, the mobile station can travel at a speed that would position said mobile station at a distance that prevents said mobile station from transferring information received from the information source).

Regarding Claim 54, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 48. Honda further teaches wherein the update arrangement is arranged to maintain the received location data items by increasing the distance-related quantity of a said location data item by an amount related to the transmission range of the transmitting entity in respect of one of receipt and transmission of the location data item by the subject entity (Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission distance).

Regarding Claim 55, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 54. Honda further teaches wherein the update arrangement is arranged to increase the distance-related quantity of a location data item immediately prior to the entity transmitting that item to another entity, this increase being by a fixed transmission range value (Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission

distance, said correction will be obtained by adding a fixed value if the mobile station does not move).

Regarding Claim 56, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 54. Honda further teaches wherein the update arrangement is arranged to increase the distance-related quantity of a location data item received from another entity by a fraction of a range value for the transmitting entity (Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission distance, said correction can be obtained by adding a fraction of a value), the update arrangement being arranged to determine this fraction in dependence on the received signal strength as measured by the short-range transceiver (Column 7 lines 43 – 50).

Regarding Claim 57, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 48. Honda further teaches a location determining arrangement for effecting location determination by determining what locations are simultaneously consistent, or most nearly consistent, with the said upper bound distances known to the entity (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, if the mobile station does not move the distance calculated from the position information will not be corrected and thus will be consistent with the distance related values that can comprise said position information thus said mobile station can determine what locations are consistent with said distant related

values, thus said mobile station will comprise a location determination arrangement that conducts said determination).

Regarding Claim 58, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 57. Honda further teaches wherein the location determining arrangement is arranged in determining the location of the entity, to apply one or more route constraints for how the location data items passed to the entity (Column 7 lines 9 – 17, the information must be transferred from other mobile stations instead of A and B thus the route of transfer is restricted to said other mobile stations).

Regarding Claim 59, Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 58. Honda further teaches wherein the location determining arrangement is arranged in determining the location of the entity to apply a constraint that the said upper bound values are distances along predetermined routes from the known locations concerned (Column 2 lines 62 – 67, Column 3 lines 1 – 7, the propagation of information is limited to a specific area thus there will be specific routes for said area).

Regarding Claim 60, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 58. Honda further teaches wherein the location determining arrangement is arranged in determining the location of the entity to apply a constraint that the said upper bound values are distances along indeterminate routes that avoid particular zones (Column 7 lines 1 – 17, the particular zones are the high density areas, the information must be transferred from other mobile stations instead of A and B thus the route of transfer is restricted to said other mobile stations).

Regarding Claim 72, Honda teaches a mobile entity provided with a location discovery system comprising: a short-range receiver for receiving location data items from currently nearby transmitting entities (Column 2 lines 36 – 42, Column 6 lines 13 – 16), each location data item specifying a known location and including a distance – related quantity indicative of an upper bound distance to a known location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated); a memory for storing the received data items (Column 6 lines 33 – 37); a distance sub-system for measuring or estimating the distance traveled by the mobile entity (Figure 5, the position detector is the distance sub-system); an update unit for updating the received data items by increasing the distance-related quantity of each data item by the distance measured or estimated by the distance sub-system since the item concerned was received or last updated (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station along with the distance related values will be corrected by said finite increment thus there will be an update unit such that said correction is conducted); and a location determination unit operative to determine what locations are simultaneously consistent, or most nearly consistent, with

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the upper bound distances known to the mobile entity (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, if the mobile station does not move the distance calculated from the position information will not be corrected and thus will be consistent with the distance related values that can comprise said position information thus said mobile station can determine what locations are consistent with said distant related values, thus said mobile station will comprise a location determination unit that conducts said determination).

Honda does not teach a distance quantity.

Kingdon teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the distance quantity taught by Kingdon in the position information of Honda as an alternative means for determining the distance from the information source.

Regarding Claim 73, Honda teaches an entity provided with a location discovery system comprising: a short-range receiver for receiving location data items from currently nearby transmitting entities (Column 2 lines 36 – 42, Column 6 lines 13 – 16), each location data item specifying a known location and including a distance-related quantity indicative of an upper bound distance to a known location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such

as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated); a memory for storing the received data items (Column 6 lines 33 – 37); an update unit for updating the received data items by increasing the distance-related quantity of each data item by an amount related to the transmission range of the transmitting entity in respect of one of receipt and transmission of the location data item by the entity (Column 7 lines 43 – 50, Column 7 lines 63 – 67, Column 8 lines 1 – 3, each position of the mobile station comprises a particular distance from the information source, each said distance has a corresponding transmission distance of said information source thus the correction will take into account said transmission distance, thus there will be an update unit that conducts said correction) and a location determination unit operative to determine what locations are simultaneously consistent, or most nearly consistent, with said upper bound distances known to the mobile entity (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, if the mobile station does not move the distance calculated from the position information will not be corrected and thus will be consistent with the distance related values that can comprise said position information thus said mobile station can determine what locations are consistent with said distant related values, thus said mobile station will comprise a location determination unit that conducts said determination).

Honda does not teach a distance quantity.

Kingdon teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the distance quantity taught by Kingdon in the position information of Honda as an alternative means for determining the distance from the information source.

Regarding Claim 74, Honda teaches a location discovery method wherein location data items originating at known locations are passed to, and diffused between, mobile entities by short-range communication (Column 2 lines 36 – 42, Column 6 lines 13 – 16), each location data item received by a mobile entity specifying a location and including a distance-related quantity indicative of a maximum distance of the entity from the specified location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated), and each mobile entity prior to using a location data item for location determination or transferring it to another mobile entity, increasing the maximum distance indicated by the distance-related quantity of the location data item to take account of movement of the mobile entity since receiving that item (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station along with the distance related values will be corrected by

said finite increment), the mobile entity effecting location determination by finding locations simultaneously consistent with said maximum distances it knows of (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, if the mobile station does not move the distance calculated from the position information will not be corrected and thus will be consistent with the distance related values that can comprise said position information) and any applicable route constraints for how the location data items passed to the mobile entity (Column 7 lines 9 – 17, the information must be transferred from other mobile stations instead of A and B thus the route of transfer is restricted to said other mobile stations).

Honda does not teach a distance quantity.

Kingdon teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the distance quantity taught by Kingdon in the position information of Honda as an alternative means for determining the distance from the information source.

Regarding Claim 75, Honda teaches a location discovery method in which a mobile entity receives location data items from currently-nearby transmitting entities (Column 2 lines 36 – 42, Column 6 lines 13 – 16), each location data item specifying a location and including a distance-related quantity indicative of a maximum distance to that location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical

position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated); maintains the received data items by increasing the distance-related quantity of each data item by the actual or estimated movement of the mobile entity (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station along with the distance related values will be corrected by said finite increment); and effects location determination by determining what locations are simultaneously within all the said maximum distances known to the mobile entity (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, if the mobile station does not move the distance calculated from the position information will not be corrected and thus will be consistent with the distance related values that can comprise said position information) and satisfy any other constraints applied by the mobile entity (Column 7 lines 9 – 17, the information must be transferred from other mobile stations instead of A and B thus the route of transfer is restricted to said other mobile stations).

Honda does not teach a distance quantity.

Kingdon teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the distance quantity taught by Kingdon in the position information of Honda as an alternative means for determining the distance from the information source.

Regarding Claim 76, Honda teaches all of the claimed limitations recited in Claim 75. Honda further teaches wherein the mobile entity, on encountering another mobile entity, passes on its previously received location data items to the other mobile entity (Column 9 lines 49 – 61) the distance-related quantities associated with these items having been increased to take account of the actual or estimated movement of the mobile entity passing them on (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, distance can be corrected or increased based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station will be corrected by said finite increment). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claims 77, 78, Honda teaches all of the claimed limitations recited in Claims 75, 76 respectively. Honda further teaches wherein the mobile entity is a vehicle equipped with a short – range transceiver (Column 6 lines 13 – 16, Column 6 lines 20 – 21) and an odometer (Column 6 lines 20 – 21, the mobile station can be in a car, which has an odometer), the vehicle increasing the distance-related quantities of its location data items by the distance traveled by the vehicle as indicated by said odometer (Column 7 lines 56 – 67, Column 8 lines 1 – 3, distance can be corrected or updated

based on the position of said mobile station thus if said mobile station moves a finite increment in distance, which can be measured by the odometer in the car, the distance from the information source to said mobile station will be corrected by said finite increment). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claims 79, 80, Honda teaches all of the claimed limitations recited in Claims 75, 76 respectively. Honda further teaches wherein the mobile entity is a pedestrian carrying a mobile device with a short-range transceiver (Column 6 lines 13 – 16, Column 9 lines 49 – 52), the device effecting an estimate of the maximum distance likely to have been traveled by the pedestrian based on a speed value and elapsed time (Figure 5, Column 6 lines 29 – 32), and the device increasing the distance-related quantities of its location data items by said estimate of the maximum distance likely to have been traveled by the pedestrian (Column 7 lines 63 – 67, Column 8 lines 1 – 3). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 81, Honda teaches all of the claimed limitations recited in Claim 75. Honda further teaches applying a constraint that the said maximum distances are distances along predetermined routes from the specified locations concerned (Column 2 lines 62 – 67, Column 3 lines 1 – 7, the propagation of information is limited to a specific area thus there will be specific routes for said area).

Regarding Claim 82, Honda teaches all of the claimed limitations recited in Claim 75. Honda further teaches applying a constraint that the said maximum distances are

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distances along indeterminate routes that avoid particular zones (Column 7 lines 1 – 17, the particular zones are the high density areas, the information must be transferred from other mobile stations instead of A and B thus the route of transfer is restricted to said other mobile stations).

Regarding Claim 83, Honda teaches a mobile entity provided with a location discovery system comprising: a short-range receiver for receiving location data items from currently nearby transmitting entities (Column 2 lines 36 – 42, Column 6 lines 13 – 16), each location data item specifying a location and including a distance-related quantity indicative of a maximum distance to that location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated); a memory for storing the received data items (Column 6 lines 33 – 37); a distance sub-system for measuring or estimating the distance traveled by the mobile entity (Figure 5, the position detector is the distance sub-system); an update unit for updating the received data items by increasing the distance-related quantity associated with each data item by the distance measured or estimated by the distance sub-system since the item concerned was received or last updated (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the

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distance from the information source to said mobile station will be corrected by said finite increment thus there will be an update unit such that said correction is conducted); and a location determination unit operative to determine what locations are simultaneously within all the said maximum distances known to the mobile entity (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, if the mobile station does not move the distance calculated from the position information will not be corrected and thus will be consistent with the distance related values that can comprise said position information thus said mobile station can determine what locations are consistent with said distance related values, thus said mobile station will comprise a location determination unit that conducts said determination) and satisfy any other constraints applied by the mobile entity (Column 7 lines 9 – 17, the information must be transferred from other mobile stations instead of A and B thus the route of transfer is restricted to said other mobile stations).

Honda does not teach a distance quantity.

Kingdon teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the distance quantity taught by Kingdon in the position information of Honda as an alternative means for determining the distance from the information source.

Regarding Claim 85, Honda teaches a method of disseminating location information wherein location data items originating at known locations are passed to,

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and diffused between, entities by short-range communication (Column 2 lines 36 – 42, Column 6 lines 13 – 16), each location data item specifying the said known location at which it is originated and including a distance-related quantity indicative, without computational combination with the specified known location, of an upper bound value for the distance traveled by the location data item from the specified known location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated, the typical position information comprises fields that contain said information, said fields prevent a computational combination), said entities updating the distance-related quantities of location data items they handle to take account of perceived travel of these location data items (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, distance can be corrected or updated based on the position of said mobile station thus if said mobile station moves a finite increment in distance the distance from the information source to said mobile station along with the corresponding distance related values will be corrected by said finite increment).

Honda does not teach a distance quantity.

Kingdon teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the distance quantity taught by Kingdon in the position information of Honda as an alternative means for determining the distance from the information source.

Regarding Claim 86, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 1. Honda further teaches wherein the distance-related quantity is indicative of an upper bound value for the distance traveled by the location data item from the specified known location, independently of the specified known location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated, the typical position information comprises fields that contain said information, said fields enable the independence of said information). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claim 87, Honda in view of Kingdon teaches all of the claimed limitations recited in Claim 48. Honda further teaches wherein the distance-related quantity included in each location data item and indicative of an upper bound distance to the originating location specified in the data item, is independent of the specified originating location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical

position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated, the typical position information comprises fields that contain said information, said fields enable the independence of said information). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claims 88, 89, Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 72, 73. Honda further teaches wherein the distance-related quantity included in each location data item and indicative of an upper bound distance to the known location specified in the data item, is independent of the specified known location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated, the typical position information comprises fields that contain said information, said fields enable the independence of said information). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

Regarding Claims 90, 91, 92, Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 74, 75, 83. Honda further teaches wherein the distance-related quantity included in each location data item and indicative of the maximum distance from the location specified in the data item, is independent of the

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specified location (Column 2 lines 62 – 67, Column 3 lines 1 – 7, Column 7 lines 56 – 67, Column 8 lines 1 – 3, the position information is the location data item, the typical position information will comprise information such as location of the information source and distance related values, such as location coordinates, indicative of the maximum distance to or from said source such that the distance from said source can be calculated, the typical position information comprises fields that contain said information, said fields enable the independence of said information). Kingdon further teaches a distance quantity (Column 4 lines 17 – 31, the latitude is a distance quantity).

8. Claims 19, 31, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al. (US 6,477,353) in view of Kingdon et al. (6,078,818), as applied to Claims 12, 24, 36, and further in view of Chou (US 6,327,533).

Regarding Claims 19, 31, 43, Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 12, 24, 36 respectively. Honda in view of Kingdon does not teach said entity initially indicating multiple location zones where the entity could be located, the entity seeks to determine which location zone is the most probable on the basis of one or more of the following probability indicators: the size of the location zones as compared with an expected degree of location uncertainty; the natures of the routes followed in order to arrive at the location zones from the known locations involved; a previous history of locations visited or passed through by the entity; the correspondence of sensed travel events, such as turning, with opportunities for such events along routes to the location zones.

Chou teaches an entity initially indicating multiple location zones where the entity could be located (Column 3 lines 23 – 25, Column 4 lines 23 – 26, Column 6 lines 52 – 58, the smart mobile unit (SMU) can indicate multiple areas that the object can be based on the locations of said object in the past) the entity seeks to determine which location zone is the most probable on the basis of one or more of the following probability indicators: the size of the location zones as compared with an expected degree of location uncertainty; the natures of the routes followed in order to arrive at the location zones from the known locations involved; a previous history of locations visited or passed through by the entity; the correspondence of sensed travel events, such as turning, with opportunities for such events along routes to the location zones (Column 6 lines 52 – 58, the history of the locations of the object are used to determine the most probable location when GPS data is lost).

Honda in view of Kingdon and Chou both teach a mobile station that determines the position of an object via a GPS system thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the location history method taught above by Chou in the mobile station of Honda for the purpose of maintaining an autonomous object position update when GPS data is lost as taught by Chou.

9. Claims 21 – 23, 33 – 35, 45 – 47, 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al. (US 6,477,353) in view of Kingdon et al.

(6,078,818), as applied to Claims 12, 24, 36, 57 above, and further in view of Pite (6,167,276).

Regarding Claims 21, 33, 45, 61 Honda in view of Kingdon teaches all of the claimed limitations recited in Claims 12, 24, 36, and 57 respectively. Honda in view of Kingdon does not teach wherein the location determining arrangement is arranged to derive a best estimate of location within an area of possible locations based on an averaging relative to vertices of that area.

Pite teaches wherein a best estimate of location is derived within an area of possible locations based on an averaging relative to vertices of that area (Figure 1, Column 4 lines 41 – 44, Column 8 lines 30 – 40).

Honda in view of Kingdon and Pite teach a wireless system in which location of the mobile station is determined thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the averaging relative to vertices method taught by Pite in the wireless system of Honda in view of Kingdon for the purpose of providing an alternative means of locating a mobile station as taught by Pite.

Regarding Claims 22, 34, 46, Honda in view of Kingdon and in further view of Pite teaches all of the claimed limitations recited in Claims 21, 33, 45 respectively. Pite further teaches wherein the estimate is carried out by averaging of coordinate values of said vertices (Column 8 lines 30 – 40, the triangle is created from the vertices, which are averaged points of said triangle).

Regarding Claims 23, 35, 47, Honda in view of Kingdon and in further view of Pite teaches all of the claimed limitations recited in Claims 21, 33, 45 respectively. Pite

further teaches wherein said estimate is carried out by finding the center of gravity of a polygon delimited by said vertices (Column 8 lines 30 – 40, the polygon is the triangle).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

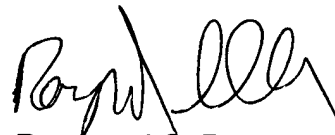
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S Dean whose telephone number is 703-305-8998. The examiner can normally be reached on 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay A Maung can be reached on 703-308-7745. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Raymond S. Dean
March 17, 2005



NAY MAUNG
SUPERVISORY PATENT EXAMINER